

# Letters to the editor

## OTHER RESEARCH INTERESTS REGARDING BIOMARKERS IN THE POPULATION WITH ALCOHOL DEPENDENCY

### DEAR EDITOR:

I found the article "Review of current clinical biomarkers for the detection of alcohol dependence," by Tavakoli, Hull, and Okasinski, [*Innov Clin Neurosci*. 2011; 8(3):26–33] quite detailed and informative. As mentioned by the authors, there continues to be an ongoing search for more accurate and precise biomarkers. There is also even ongoing research for biomarkers that can predict susceptibility to alcohol withdrawal seizures in the population with alcohol dependency. The ideal biomarker would be one that would indicate exposure/effect and be easily detectable, inexpensive, have high specificity and sensitivity, would be fast and reliable, and be present for a period of time when it can be detected.

The authors focused on the main biomarkers, namely carbohydrate-deficient transferrin, alanine aminotransferase/aspartate aminotransferase, mean corpuscular volume, gamma-glutamyl transferase, and ethyl glucuronide. The combinations of these main biomarkers for improved accuracy were also discussed in the article. The authors also made mention of alcohol biomarkers for the future, including serum total sialic acid, whole blood associated acetaldehyde, phosphatidylethanol, and fatty acid ethyl esters. Other future biomarkers that are currently being investigated include 5-hydroxytryptophol (5-HTOL), proteomic research, dolichols, beta-hexosaminidase, and alpha-amino-n-butyric acid.<sup>1–3</sup>

5-HTOL is a byproduct of serotonin breakdown under normal conditions.

Under normal conditions, the ratio of 5-HTOL/5-HIAA is small, but when there is heavy alcohol consumption 5-HTOL increases leading to an increase in the ratio. 5-HTOL is detected in urine 5 to 15 hours longer than the current standard alcohol measurements, making it a reliable 24-hour marker for heavy alcohol consumption.<sup>1</sup> Dolichols, which are also being studied, are chemicals found raised in both serum and urine of individuals with alcohol dependency.<sup>1</sup> Some results regarding this test have been controversial.

N-acetyl-(beta)-hexosaminidase is an enzyme elevated in heavy alcohol drinkers, and studies have shown it to have fairly high specificity and sensitivity. It falls to normal levels in a week or more of abstinence. N-acetyl-(beta)-hexosaminidase is an assay that is currently not obtainable in the United States, and conditions like diabetes and hypertension can result in elevated levels of this enzyme.<sup>3</sup> Research regarding the usefulness of proteomics and alpha-amino-n-butyric acid are also being researched.<sup>1,2</sup>

Other research interests regarding biomarkers in the population with alcohol dependency are markers that can predict susceptibility to alcohol withdrawal seizures, as this would also help in detoxification treatments. Some studies have shown an elevation in serum homocysteine and prolactin in patients with alcohol dependency.<sup>4</sup> Those with raised prolactin face more obstacles, especially in the population with dual diagnosis and those receiving antipsychotic treatment, as prolactin would be raised in individuals on medications with potent D2 blocking effects. Clearly, more studies regarding more accurate biomarkers are necessary, and the quest for an ideal or closer-to-ideal biomarker would be valuable

## LETTERS TO THE EDITOR SUBMISSIONS

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With regards,

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